Space Weather Forecast

Issued on Friday, 26 May 2023 at 01:27 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

Space Weather Forecast Headline: R1/R2 radio blackouts Likely.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has been moderate over the last 24 hours, with occasional Common-class X-ray flares and an isolated Moderate flare from an apparently small, simple and weak region in the southwest quadrant. There are currently seven sunspot groups on the Sun, of which six are numbered. Two of these two regions have a complex magnetic structure, and one is noticeably larger than all other regions.

Solar Wind / Geomagnetic Activity: Solar winds have shown a fast wind regime, likely to be that from a large coronal hole on the southwest of the Sun. Solar wind speeds have been predominantly Elevated, generally between 530-580 km/s, but occasionally reached Strong levels over 600 km/s. The strength of the solar wind's magnetic field has remained weak, as has the important north-south component of the magnetic field, with occasional southwest deviations.

The net result of the above solar wind measures was for Quiet to Unsettled geomagnetic activity.
Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Solar activity is Likely to remain Moderate, with isolated M-class flares Likely and a Slight Chance of X-class flares. No sunspots leave the disc in the four days, while potentially new regions may rotate on from the far side. As these regions have yet to appear for analysis over the eastern limb, the potential risks of significant flares remain constant throughout the forecast period.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs currently expected, although a weak CME may give some glancing influence today or tomorrow (26 or 27 May). Solar winds expected to start at Elevated levels around 500km/s due to the continued influence of an enhanced solar wind from a coronal hole feature. Wind speeds are forecast to decline steadily towards background levels through today, tomorrow and day 3 (26 to 28th May), although any decline may be temporarily inhibited by the possible CME glance. During day 4 (29th) a solar wind enhancement is expected to become geoeffective, with speeds of 500-550 km/s possible.

Geomagnetic activity is expected to be Quiet to Unsettled today and again day 4 (29th) with a slight chance of isolated Active intervals. In-between predominantly Quiet activity is expected.

Energetic Particles / Solar Radiation: No solar radiation storms are expected, however there is a slight chance of reaching the S1/Minor Storm threshold should any larger flares occur.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	10	1	1	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	60	60	60	60
Very Active	R3 to R5 X	No	10	10	10	10

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	10	15	15	15
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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